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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,258	09/30/2003	Seung H. Kang	Ayukawa 1-4-1-162-30/0759	4017
29391	7590	02/03/2006	EXAMINER	
BEUSSE BROWNLEE WOLTER MORA & MAIRE, P. A. 390 NORTH ORANGE AVENUE SUITE 2500 ORLANDO, FL 32801			LE, THAO X	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 02/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/675,258	KANG ET AL.	
	Examiner	Art Unit	
	Thao X. Le	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 17-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 03 Jan 2006 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "the one or more levels of interconnect" in line 2. There is insufficient antecedent basis for this limitation in the claim.

For the purpose of examination, assuming the limitation reads as 'the multilevel metallization interconnect system'.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

((b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 6-10, 12-16, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6229221 to Kloen et al.

Regarding claims 1, Kloen discloses an integrated circuit (IC) device in fig. 2 comprising: a semiconductor substrate 6, col. 3 line 57, a multi level metallization interconnect system 16/19, col. 4 lines 6 and 10, overlying the semiconductor substrate 6, a bond pad level 3, column 4 line 39, comprising a plurality of contact pads 22/23, col. 4 lines 28 and 30, overlying the metallization interconnect system 16/19, one or more of the plurality of contact pads 3 configured for connection external to the device and connected to the metallization system, fig. 2, and an interconnect structure 22 configured to transfer power from one or more of the plurality of contact pad connected to an external source to the metallization interconnect system, fig. 2, wherein at least a portion of the interconnect structure 22 configured to transfer power is disposed in the bond pad 3 level and extends to other regions of the semiconductor substrate 6 away from the plurality of contact pads, fig. 2.

Regarding claims 2-3, 6 and 13-14, Kloen discloses the IC device wherein a material of the metallization interconnect system comprises copper, col. 4 line 12,

wherein a material of the bond pads (or bond pads) level comprises aluminum, column 4 line 47.

Regarding claims 4-5, Kloen discloses the IC wherein the plurality of contact pads are configured for connection external to the device by a bond wire 24 and by a solder bump, fig. 2, attached to one or more of the plurality of contact pads, fig. 2.

Regarding claims 7-9,15-16, Kloen discloses the IC device of further comprising one or more vias 18, column 4 line 9, underlying, fig. 2, and in electrical communication with the interconnect structure to transfer power, wherein the metallization interconnect system further comprises substantially horizontal conductive runner 19, fig. 2, and substantially vertical conductive vias 18 interconnecting overlying and underlying copper conductive runner, fig. 2.

Regarding claim 10, Kloen discloses the IC further comprising a passivation layer 20, column 4 line 15, disposed between the bond pad level 3 and the metallization system 16/19, wherein the passivation layer 20 is further disposed between the interconnect configured to transfer power and an uppermost level of the metallization interconnect system, fig. 2.

Regarding claims 12, Kloen discloses an integrated circuit (IC) device comprising: a multilevel metallization interconnect system 16/19, fig. 2, a plurality of contact pads 22/23 disposed over an upper most level of the multilevel metallization interconnect system, one or more of the plurality of contact pads configured for connection external to the device, and an interconnect structure 22 coplanar with at least one of the plurality of contact pads and electrically connected to underlying levels

of the multilevel metallization interconnect system, fig. 2, away from plurality of contact pads, fig. 2.

Regarding claim 26, Kloen discloses the IC wherein at least a portion of the interconnect configured to transfer power is disposed above one or more of the plurality of contact pads, fig. 2.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 6 and 11 rejected under 35 U.S.C. 103(a) as being unpatentable over US 6229221 to Kloen et al. in view of Applicant Admitted Prior Art (AAPA)

Regarding claims 6 and 11, Kloen does not disclose the IC comprises a barrier material in regions of physical contact between the copper and aluminum and further comprising a passivation layer overlying the bond pad level.

However, AAPA discloses a IC comprises a multilevel metallization interconnect system comprises a barrier material 155, in regions of physical contact between the copper 146 and aluminum 156 [0031] and further comprising a passivation layer 158 [0032] overlying the bond pad level. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use barrier and passivation teaching of AAPA with Kloen's device, because the barrier layer would have prevented the interaction between the copper and aluminum layers as taught by AAPA, [0031], and passivation layer would have provided the protection to the aluminum layer and or for further interconnecting layer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'Thao X. Le', written over a horizontal line.

Thao X. Le
17 Jan. 2006